High Meadows Environmental Institute

SEPTEMBER 13, 2024

Summer of Learning Symposium



Summer of Learning Symposium

High Meadows Environmental Institute (HMEI) is pleased to host the 17th annual Summer of Learning Symposium — the culminating event for students who participated in HMEI's Environmental Internship Program this past summer. HMEI's internship program provides a unique opportunity for students to complement their academic interests with hands-on work experiences and is designed to enrich students' perspectives and preparation as leaders. This year's symposium celebrates the 98 Princeton students from 20 academic departments who worked with University faculty, researchers from other scientific enterprises, government agencies, and not-for-profit organizations on projects focused on pressing environmental challenges.

The symposium provides an interactive forum for students to recognize and celebrate each other's work and contributions, exchange perspectives, develop a shared mission, and consider practical, achievable paths toward a healthier and more sustainable planet.

HMEI interns undertook research projects in Princeton University labs, and in field sites around the globe including assignments in Bermuda, Madagascar, Mozambique, Rwanda, Peru, and Alaska. HMEI interns contributed meaningfully to research advances and emerging scholarship, including projects focused on climate change, biodiversity loss and conservation, alternative energy, environmental policy, urban resilience, and water.

We extend our congratulations to the students and our appreciation to those faculty, colleagues, friends, and community partners who made this year's internship program and the Summer of Learning Symposium possible.

Front Cover: Will Aepli '26

Schedule of Presentations

9:00 AM – 11:05 AM **JRR 399**	Water and Agriculture (pp. 3-5)
9:05 AM – 11:00 AM **JRR 397**	Biodiversity and Conservation (pp. 6-8)
9:15 AM – 11:00 AM **JRR 301**	Environmental Policy (pp. 9-11)
11:45 AM – 1:45 PM **JRR 399**	Climate and Environmental Science (pp. 12-14)
1:00 PM – 2:35 PM **JRR 301**	Environment, Society and Urban Sustainability (pp. 15-16)
1:05 PM – 2:45 PM **JRR 397**	Innovation and a New Energy Future (pp. 17-18)
2:30 PM – 4:15 PM **JRR 399**	Oceans and the Environment (pp. 19-20)

Water and Agriculture

9:00 AM – 11:05 AM

MODERATOR: AMILCARE PORPORATO, THOMAS J. WU '94 PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING, PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE, FACULTY ADVISOR, ENGINEERS WITHOUT BORDERS, PRINCETON UNIVERSITY CHAPTER

Engineers Without Boarders: Irrigation Project in Carnachique, Peru

NA'IM AHDIEH '25, CIVIL AND ENVIRONMENTAL ENGINEERING
ALEXIS CRUZ '27, CIVIL AND ENVIRONMENTAL ENGINEERING
HECTOR CUEVA-BECERRA '26, CIVIL AND ENVIRONMENTAL ENGINEERING
SRIYA KOTTA '26, ELECTRICAL AND COMPUTER ENGINEERING
JOANNA TAFOLLA '26, CIVIL AND ENVIRONMENTAL ENGINEERING
ELLEN TOBERMAN '25, CIVIL AND ENVIRONMENTAL ENGINEERING

MENTORS: AMILCARE PORPORATO, THOMAS J. WU '94 PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING, PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE, FACULTY ADVISOR, ENGINEERS WITHOUT BORDERS, PRINCETON UNIVERSITY CHAPTER; SCOTT GREGORY, PROGRAM ENGINEER, ENGINEER WITHOUT BORDERS, USA

StreamWatch Water Quality Monitoring Program

SOPHIA GIRAND '25, ECOLOGY AND EVOLUTIONARY BIOLOGY
BRIAN NGUYEN '27, CIVIL AND ENVIRONMENTAL ENGINEERING

MENTORS: ERIN STRETZ, ASSISTANT DIRECTOR OF SCIENCE AND STEWARDSHIP, THE WATERSHED INSTITUTE; JIAN SMITH, STREAMWATCH PROGRAM COORDINATOR, THE WATERSHED INSTITUTE

Understanding Watershed Processes in Complex Terrain: Mountain Hydrology at Snodgrass Hillslope

BROOKE BEERS '25, CIVIL AND ENVIRONMENTAL ENGINEERING
ASHLEY DEFRATES '25, CIVIL AND ENVIRONMENTAL ENGINEERING

MENTORS: REED MAXWELL, WILLIAM AND EDNA MACALEER PROFESSOR OF ENGINEERING AND APPLIED SCIENCE, PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; HARRY STONE, PH.D. CANDIDATE, CIVIL AND ENVIRONMENTAL ENGINEERING

Using Solid-State Fermentation To Create Nutrient-Dense Food

MADISON McNEAL-MARTINIS '27, MOLECULAR BIOLOGY
JUSTIN YOO '27, CHEMICAL AND BIOLOGICAL ENGINEERING

MENTORS: JOSÉ AVALOS, ASSOCIATE PROFESSOR OF CHEMICAL AND BIOLOGICAL ENGINEERING AND BIOENGINEERING; YEKATERINA TARASOVA, ASSOCIATE RESEARCH SCHOLAR, CHEMICAL AND BIOLOGICAL ENGINEERING

Understanding the Effects of "Three Sisters" Crop Mutualisms

EDALIX MARIN '27, ECOLOGY AND EVOLUTIONARY BIOLOGY
TRINITY SMITH '27, ECOLOGY AND EVOLUTIONARY BIOLOGY

MENTORS: DANIEL RUBENSTEIN, CLASS OF 1877 PROFESSOR OF ZOOLOGY, EMERITUS, PROFESSOR OF ECOLOGY AND EVOLUTIONARY BIOLOGY, EMERITUS; GINA TALT, PROJECT MANAGER, FOOD SYSTEMS, OFFICE OF SUSTAINABILITY

Probing Microbial Colonization of Plants During Drought to Enable Microbe-Mediated Resilience in Crops

DIANA SAVCHYN '25, CHEMICAL AND BIOLOGICAL ENGINEERING

MENTORS: JONATHAN CONWAY, ASSISTANT PROFESSOR OF CHEMICAL AND BIOLOGICAL ENGINEERING; SAMUEL EASTMAN, POSTDOCTORAL RESEARCH ASSOCIATE, CHEMICAL AND BIOLOGICAL ENGINEERING; CHAO LIAO, POSTDOCTORAL RESEARCH ASSOCIATE, CHEMICAL AND BIOLOGICAL ENGINEERING

Analyzing Various Plant Models and Developing High-throughput Microplanters for Enhanced Plant Growth Studies and Climate-resilient Agriculture

ROSE HABIB '27, ECOLOGY AND EVOLUTIONARY BIOLOGY
JEREMY KIM '27, CHEMICAL AND BIOLOGICAL ENGINEERING
RAJAN PATEL '27, MECHANICAL AND AEROSPACE ENGINEERING

MENTORS: JONATHAN CONWAY, ASSISTANT PROFESSOR OF CHEMICAL AND BIOLOGICAL ENGINEERING; ELLA GUNADY, PH.D. CANDIDATE, CHEMICAL AND BIOLOGICAL ENGINEERING; TING JIANG, POSTDOCTORAL RESEARCH ASSOCIATE, CHEMICAL AND BIOLOGICAL ENGINEERING

Fitness of Brevundimonas *sp. MF374 and* Dyella japonica *MF79 in Plant Root Exudate*

ANTHEA ZHANG '25, CHEMICAL AND BIOLOGICAL ENGINEERING

MENTOR: JONATHAN CONWAY, ASSISTANT PROFESSOR OF CHEMICAL AND BIOLOGICAL ENGINEERING

Biodiversity and Conservation

9:05 AM – 11:00 AM

MODERATOR: MARY CASWELL STODDARD, PROFESSOR OF ECOLOGY AND EVOLUTIONARY BIOLOGY

Competition-induced Evolution in a Seasonal Environment

MULIN HUAN '26, ECOLOGY AND EVOLUTIONARY BIOLOGY
AUSTIN KERKER '26, MOLECULAR BIOLOGY

MENTORS: JONATHAN LEVINE, J.N. ALLISON PROFESSOR IN ENVIRONMENTAL STUDIES, PROFESSOR OF ECOLOGY AND EVOLUTIONARY BIOLOGY; JAMIE LEONARD, PH.D. CANDIDATE, ECOLOGY AND EVOLUTIONARY BIOLOGY

Machine Learning for Biodiversity Monitoring

YI JIN TOH '25, COMPUTER SCIENCE

MENTORS: HENRIK COX, HEAD OF PRODUCT, CONSERVATION X LABS; PETER BERMANT, SENIOR MACHINE LEARNING ENGINEER, CONSERVATION X LABS; DANTE WASMUHT, LEAD AI RESEARCHER, CONSERVATION X LABS

Investigating Hummingbird Behavior, Wildflower Interactions and Climate Change in the Rocky Mountains

LEILA GRANIER '26, ECOLOGY AND EVOLUTIONARY BIOLOGY
JOE UGLIALORO '27, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

MENTORS: MARY CASWELL STODDARD, PROFESSOR OF ECOLOGY AND EVOLUTIONARY BIOLOGY; AUDREY MILLER, PH.D. CANDIDATE, ECOLOGY AND EVOLUTIONARY BIOLOGY; BEN HOGAN, ASSOCIATE RESEARCH SCHOLAR, ECOLOGY AND EVOLUTIONARY BIOLOGY; SARAH SOLIE, POSTDOCTORAL RESEARCH ASSOCIATE, ECOLOGY AND EVOLUTIONARY BIOLOGY; KATJA KOCHVAR, PH.D. CANDIDATE, ECOLOGY AND EVOLUTIONARY BIOLOGY

Investigating Phenological Changes in High Alpine Yellow-bellied Marmot Populations

ALISHA ANDRADE '27, ANTHROPOLOGY
ELLA VILLACORTA '26, ECOLOGY AND EVOLUTIONARY BIOLOGY

MENTORS: BRIDGETT vonHOLDT, PROFESSOR OF ECOLOGY AND EVOLUTIONARY BIOLOGY; DAN BLUMSTEIN, PROFESSOR, DEPARTMENT OF ECOLOGY AND EVOLUTIONARY BIOLOGY, UNIVERSITY OF CALIFORNIA, LOS ANGELES; STAVI TENNENBAUM, PH.D. CANDIDATE, ECOLOGY AND EVOLUTIONARY BIOLOGY

Understanding Host-Symbiont Interactions Across a Sociality Continuum: Insights from Bees and Nematodes

MAYA CABRERA '27, ECOLOGY AND EVOLUTIONARY BIOLOGY
COLLIN GUEDEL '26, GEOSCIENCES

MENTORS: ANDREA GRAHAM, PROFESSOR OF ECOLOGY AND EVOLUTIONARY BIOLOGY; CHARLOTTE KNOPP, PH.D. CANDIDATE, ECOLOGY AND EVOLUTIONARY BIOLOGY

Climate Change and Disease Transmission: Impacts of Toxoplasma Gondii on Madagascar's Endemic and Endangered Species

SOPHIE JOHNSON '26, ECOLOGY AND EVOLUTIONARY BIOLOGY
SEDISE TIRUNEH '27, ANTHROPOLOGY

MENTORS: C. JESSICA E. METCALF, PROFESSOR OF ECOLOGY AND EVOLUTIONARY BIOLOGY AND PUBLIC AFFAIRS; FIDISOA RASAMBAINARIVO, ASSISTANT PROFESSOR, EAST CAROLINA UNIVERSITY; BENJAMIN RICE, ASSOCIATE RESEARCH SCHOLAR, HIGH MEADOWS ENVIRONMENTAL INSTITUTE

Connecting Resource Availability to Large Mammal Diets in Akagera and Nyungwe National Parks, Rwanda

PAYGE NEALS '26, ECOLOGY AND EVOLUTIONARY BIOLOGY
DAISY PROSSER '27, NEUROSCIENCE

MENTORS: ROBERT PRINGLE, PROFESSOR OF ECOLOGY AND EVOLUTIONARY BIOLOGY; MEGAN SULLIVAN, FULBRIGHT SCHOLAR, RESEARCH AFFILIATE, CENTER OF EXCELLENCE IN BIODIVERSITY & NATURAL RESOURCE MANAGEMENT, UNIVERSITY OF RWANDA

Thermoregulation as an Axis of Niche Partitioning in Spiral-horned Antelope

SAM MILLER '26, ECOLOGY AND EVOLUTIONARY BIOLOGY

MENTORS: ROBERT PRINGLE, PROFESSOR OF ECOLOGY AND EVOLUTIONARY BIOLOGY; HENRY GAGE, PH.D. CANDIDATE, ECOLOGY AND EVOLUTIONARY BIOLOGY; HALLIE WALKER, POSTDOCTORAL RESEARCH ASSOCIATE, ECOLOGY AND EVOLUTIONARY BIOLOGY

Environmental Policy

9:15 AM – 11:00 AM

MODERATOR: DAVID WILCOVE, PROFESSOR OF ECOLOGY AND EVOLUTIONARY BIOLOGY AND PUBLIC AFFAIRS AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE, VICE DEAN, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

Analysis of Solar Recycling Feasibility Via Constrained Optimization in the Continental United States

AJ CAESAR '27, ELECTRICAL AND COMPUTER ENGINEERING

MENTORS: ERIC LARSON, SENIOR RESEARCH ENGINEER, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; CECELIA ISAAC, ASSOCIATE PROFESSIONAL SPECIALIST, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT

A Change into Energy Systems Modeling

CAMERON FARID '26, MECHANICAL AND AEROSPACE ENGINEERING
RYO MITSUHASHI '27, COMPUTER SCIENCE

MENTOR: ERIC LARSON, SENIOR RESEARCH ENGINEER, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT

Social Norms and Large Language Models (LLMs)

HUMNAH POONAWALLA '27, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING
ANNIE XIONG '25, GERMAN

MENTORS: ELKE WEBER, GERHARD R. ANDLINGER PROFESSOR IN ENERGY AND THE ENVIRONMENT, PROFESSOR OF PSYCHOLOGY AND THE SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS; JORDANA COMPOSTO, PH.D. CANDIDATE, PSYCHOLOGY; KRIS NICHOLS, PH.D. CANDIDATE, PSYCHOLOGY; AYA SALIM, RESEARCH LAB MANAGER, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; CALVIN SPANBAUER, PH.D. CANDIDATE, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

Estimating and Understanding the Costs of Closing a Coal Mine: A Case Study of the Rajmahal OCP

ARNAV KOKKIRALA '26, ECONOMICS

MENTORS: CHRIS GREIG, THEODORA D. '78 & WILLIAM H. WALTON III '74 SENIOR RESEARCH SCIENTIST, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; GANESH HEGDE, POSTDOCTORAL RESEARCH ASSOCIATE, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; LOIC DE WEERDT, POSTDOCTORAL RESEARCH ASSOCIATE, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT

Justice40: Federal Climate Policy Meets Environmental Justice

EVAN LI '27, GEOSCIENCES

MENTORS: ELKE WEBER, GERHARD R. ANDLINGER PROFESSOR IN ENERGY AND THE ENVIRONMENT, PROFESSOR OF PSYCHOLOGY AND THE SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS; AYA SALIM, RESEARCH LAB MANAGER, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; MELISSA TIER, PH.D. CANDIDATE, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

Co-benefits for Air Quality and Health of Power Sector Decarbonization: Linking Air Quality and Power System Models

SHIVANSH BANSAL '27, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING
CHIEN NGUYEN '25, COMPUTER SCIENCE

MENTORS: DENISE MAUZERALL, WILLIAM S. TOD PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING AND PUBLIC AND INTERNATIONAL AFFAIRS; YUANYU XIE, ASSOCIATE RESEARCH SCHOLAR, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS; MI ZHOU, POSTDOCTORAL RESEARCH ASSOCIATE, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

Understanding the Impacts of Increasing Wildfire Smoke on U.S. Surface Air Quality and Public Health

JANIYA ANGOY '27, ELECTRICAL AND COMPUTER ENGINEERING

MENTORS: DENISE MAUZERALL, WILLIAM S. TOD PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING AND PUBLIC AND INTERNATIONAL AFFAIRS; YUANYU XIE, ASSOCIATE RESEARCH SCHOLAR, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

The Interface of Hydrology and Machine Learning: Generating Better Information for Decision Makers and Educating the Decision Makers of the Future

ELLA COLBY '26, COMPUTER SCIENCE
SIDDHANT PORWAL '27, COMPUTER SCIENCE

MENTORS: REED MAXWELL, WILLIAM AND EDNA MACALEER PROFESSOR OF ENGINEERING AND APPLIED SCIENCE, PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; LISA GALLAGHER, EDUCATION AND OUTREACH SPECIALIST, IGWMC, DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING; MARIO SORIANO, POSTDOCTORAL RESEARCH ASSOCIATE, HIGH MEADOWS ENVIRONMENTAL INSTITUTE

Climate and Environmental Science

11:45 AM – 1:45 PM

MODERATOR: GABRIEL VECCHI, KNOX TAYLOR PROFESSOR OF GEOSCIENCES, PROFESSOR IN THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE, DIRECTOR, HIGH MEADOWS ENVIRONMENTAL INSTITUTE

Mechanisms of Shrubification in a Changing Arctic

WILL AEPLI '26, ECOLOGY AND EVOLUTIONARY BIOLOGY
RIO BARAN '25, GEOSCIENCES

MENTORS: JONATHAN LEVINE, J.N. ALLISON PROFESSOR IN ENVIRONMENTAL STUDIES, PROFESSOR OF ECOLOGY AND EVOLUTIONARY BIOLOGY; RUBY AN, PH.D. CANDIDATE, ECOLOGY AND EVOLUTIONARY BIOLOGY

Carbonate Diagenesis during the Hirnantian Glaciation

NABAA AL HASHIMI '25, CHEMICAL AND BIOLOGICAL ENGINEERING

MENTORS: JOHN HIGGINS, PROFESSOR OF GEOSCIENCES; GEMMA SAHWELL, PH.D. CANDIDATE, GEOSCIENCES

Automatic Characterization of Marine Carbonates Microfacies Across the OAE

COLTEN RODRIGUEZ '26, GEOSCIENCES

MENTORS: JOHN HIGGINS, PROFESSOR OF GEOSCIENCES; MATTHEW NADEAU, PH.D. CANDIDATE, GEOSCIENCES

Trace Element Uptake in Biominerals

STELLA SZOSTAK '26, GEOSCIENCES

MENTORS: JOHN HIGGINS, PROFESSOR OF GEOSCIENCES; ALLIYA AKHTAR, POSTDOCTORAL RESEARCH ASSOCIATE, GEOSCIENCES

Reconstructing Archaeocyathid Fossils to Understand the Early Cambrian

NORAH SMITH '26, ELECTRICAL AND COMPUTER ENGINEERING

MENTORS: ADAM MALOOF, PROFESSOR OF GEOSCIENCES; JULIA WILCOTS, POSTDOCTORAL RESEARCH ASSOCIATE, GEOSCIENCES

Foraminifera as Time Capsules: Interpreting Nitrogen Isotope Measurements in the Arabian Sea

JUSTIN TAM '27, CHEMISTRY
DANNY TORRES '27, NEUROSCIENCE

MENTORS: DANIEL SIGMAN, DUSENBURY PROFESSOR OF GEOLOGICAL AND GEOPHYSICAL SCIENCES, PROFESSOR OF GEOSCIENCES; UDARA AMARATHUNGA, POSTDOCTORAL RESEARCH ASSOCIATE, GEOSCIENCES

Plant Pathogens in a High-altitude System

THOMAS BUCKLEY '26, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS
LINDSAY McBRIDE '27, MOLECULAR BIOLOGY

MENTORS: C. JESSICA E. METCALF, PROFESSOR OF ECOLOGY AND EVOLUTIONARY BIOLOGY AND PUBLIC AFFAIRS; MANDY GIBSON, ASSISTANT PROFESSOR OF BIOLOGY, UNIVERSITY OF VIRGINIA; JULIANA JIRANEK, PH.D. CANDIDATE, UNIVERSITY OF VIRGINIA

Quantifying Spread in Radiative Feedbacks Due to Differences in Kernels

KAITLYN WEN '26, COMPUTER SCIENCE

MENTORS: GABRIEL VECCHI, KNOX TAYLOR PROFESSOR OF GEOSCIENCES, PROFESSOR IN THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE, DIRECTOR, HIGH MEADOWS ENVIRONMENTAL INSTITUTE; IVAN MITEVSKI, POSTDOCTORAL RESEARCH ASSOCIATE, GEOSCIENCES

Evaluating Extremes: Modeling Temperature and Mortality Relationships in a Warming World

EMMA DORNSEIF '25, ANTHROPOLOGY

MENTORS: GABRIEL VECCHI, KNOX TAYLOR PROFESSOR OF GEOSCIENCES, PROFESSOR IN THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE, DIRECTOR, HIGH MEADOWS ENVIRONMENTAL INSTITUTE; MAYA CHUNG, PH.D. CANDIDATE, ATMOSPHERIC AND OCEANIC SCIENCES

Examining Vapor Pressure Deficit Change in High-Resolution Climate Model Simulations

RUOMING SHEN '27, COMPUTER SCIENCE

MENTORS: GABRIEL VECCHI, KNOX TAYLOR PROFESSOR OF GEOSCIENCES, PROFESSOR IN THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE, DIRECTOR, HIGH MEADOWS ENVIRONMENTAL INSTITUTE; WENCHANG YANG, ASSOCIATE RESEARCH SCHOLAR, GEOSCIENCES

Environment, Society and Urban Sustainability

1:00 PM – 2:35 PM

MODERATOR: ALLISON CARRUTH, PROFESSOR OF AMERICAN STUDIES AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE, DIRECTOR, PROGRAM IN ENVIRONMENTAL STUDIES

Decision Mode Use in Residential Electric Vehicle Program Enrollment and Engagement

RIA TOMAR '27, ECOLOGY AND EVOLUTIONARY BIOLOGY

MENTORS: ELKE WEBER, GERHARD R. ANDLINGER PROFESSOR IN ENERGY AND THE ENVIRONMENT, PROFESSOR OF PSYCHOLOGY AND THE SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS; KRIS NICHOLS, PH.D. CANDIDATE, PSYCHOLOGY; AYA SALIM, RESEARCH LAB MANAGER, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; CALVIN SPANBAUER, PH.D. CANDIDATE, PRINCETON SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS

Blue Lab: Climate Stories Incubator

FARAH ARNAOUT '26, ARCHITECTURE
CHRISTOPHER BAO '27, UNDECLARED
JOSE SANTACRUZ '27, ARCHITECTURE

MENTORS: ALLISON CARRUTH, PROFESSOR OF AMERICAN STUDIES AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE, DIRECTOR, PROGRAM IN ENVIRONMENTAL STUDIES; BARRON BIXLER, PROFESSIONAL SPECIALIST, EFFRON CENTER FOR THE STUDY OF AMERICA; JAYME COLLINS, POSTDOCTORAL RESEARCH ASSOCIATE, HIGH MEADOWS ENVIRONMENTAL INSTITUTE; JESSICA NG, POSTDOCTORAL RESEARCH ASSOCIATE, HIGH MEADOWS ENVIRONMENTAL INSTITUTE; NATE OTJEN, POSTDOCTORAL RESEARCH ASSOCIATE, HIGH MEADOWS ENVIRONMENTAL INSTITUTE; MARIO SORIANO, POSTDOCTORAL RESEARCH ASSOCIATE, HIGH MEADOWS ENVIRONMENTAL INSTITUTE

The Meadowlands

BRANDON LE '26, ARCHITECTURE
KEVIN ROSALES '26, ARCHITECTURE

MENTOR: MARIO GANDELSONAS, CLASS OF 1913 LECTURER IN ARCHITECTURE, PROFESSOR OF ARCHITECTURE

Human-Animal Encounters and Conservation in the Urbanizing Amazon

RUTH ROCKER '26, ANTHROPOLOGY
WILLIAM TRAVIS '26, PSYCHOLOGY

MENTORS: AGUSTIN FUENTES, PROFESSOR OF ANTHROPOLOGY; CHRISTIAN RIVERA, POSTDOCTORAL RESEARCH ASSOCIATE, HIGH MEADOWS ENVIRONMENTAL INSTITUTE

Urban Tree Mapping in Chennai, India

CHAEYOUNG LEE '26, COMPUTER SCIENCE
JOHN LEE '27, ELECTRICAL AND COMPUTER ENGINEERING

MENTORS: ANU RAMASWAMI, SANJAY SWANI '87 PROFESSOR OF INDIA STUDIES, PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING, THE PRINCETON INSTITUTE FOR INTERNATIONAL AND REGIONAL STUDIES AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; KIRTI DAS, ASSOCIATE PROFESSIONAL SPECIALIST, CIVIL AND ENVIRONMENTAL ENGINEERING; NEHA AGARWAL, PH.D. CANDIDATE, CIVIL AND ENVIRONMENTAL ENGINEERING; AJAY NAGPURE, ASSOCIATE PROFESSIONAL SPECIALIST, CIVIL AND ENVIRONMENTAL ENGINEERING

Living Legend: Reimagining the Cross Bronx

ADAM SANDERS '25, RELIGION

MENTORS: MARIANA MOGILEVICH, EDITOR-IN-CHIEF, URBAN OMNIBUS; KEVIN RITTER, MANAGING EDITOR, URBAN OMNIBUS

Innovation and a New Energy Future

1:05 PM – 2:45 PM

MODERATOR: CLAIRE GMACHL, EUGENE HIGGINS PROFESSOR OF ELECTRICAL AND COMPUTER ENGINEERING, ASSOCIATE CHAIR, DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

A Bridge to the Future: Climate Adaptable Multifunctional Bridge-Barrier

BRAEDEN CARROLL '26, CIVIL AND ENVIRONMENTAL ENGINEERING
ETHAN SPAIN '26, MECHANICAL AND AEROSPACE ENGINEERING

MENTORS: MARIA GARLOCK, PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING; BRANKO GLISIC, PROFESSOR OF CIVIL AND ENVIRONMENTAL ENGINEERING

Microbial Engineering for Sustainability

DAVID FRANKEL '26, CHEMICAL AND BIOLOGICAL ENGINEERING
NATHAN NGUYEN '27, CHEMICAL AND BIOLOGICAL ENGINEERING
ENDRI YZELLARI '26, CHEMICAL AND BIOLOGICAL ENGINEERING

MENTORS: JOSÉ AVALOS, ASSOCIATE PROFESSOR OF CHEMICAL AND BIOLOGICAL ENGINEERING AND BIOENGINEERING; SERGIO GARCIA ECHAURI, ASSOCIATE RESEARCH SCHOLAR, CHEMICAL AND BIOLOGICAL ENGINEERING; MAX ELIKAN, PH.D. CANDIDATE, CHEMISTRY; JAEWAN JANG, POSTDOCTORAL RESEARCH ASSOCIATE, CHEMICAL AND BIOLOGICAL ENGINEERING

The Study of Mid-Infrared Lasers

CAROLINE EPSTEIN '27, ELECTRICAL AND COMPUTER ENGINEERING
MAKAILEE HENRY '27, MECHANICAL AND AEROSPACE ENGINEERING

MENTORS: CLAIRE GMACHL, EUGENE HIGGINS PROFESSOR OF ELECTRICAL AND COMPUTER ENGINEERING, ASSOCIATE CHAIR, DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING; RADHIKA BHUCKORY, PH.D. CANDIDATE, ELECTRICAL AND COMPUTER ENGINEERING

Heating in Small Fusion Reactors

JAMES BURRY '26, PHYSICS
EZEKIEL DOUGLASROSENTHAL '27, MATHEMATICS
THARUKA HIKKADUWA GAMAGE '26, MATHEMATICS

MENTORS: SAM COHEN, DIRECTOR, PROGRAM IN PLASMA SCIENCE AND TECHNOLOGY, PRINCETON PLASMA PHYSICS LABORATORY; BRUCE BERLINGER, EXP/HEATING ADVANCED TECH., ENGINEERING, PRINCETON PLASMA PHYSICS LABORATORY

Design and Development of a Solar Value Tool

STEPHANIE SUGANDI '27, COMPUTER SCIENCE

MENTORS: ERIC LARSON, SENIOR RESEARCH ENGINEER, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; JENNIFER BRADY, SENIOR DATA ANALYST AND RESEARCH MANAGER, CLIMATE CENTRAL

Building MACRO-Biomass: Optimizing Bioenergy Generation within Existing Energy Sectors

SHEETAL BANGALORE '25, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING
CYNTHIA JACOBSON '26, CIVIL AND ENVIRONMENTAL ENGINEERING

MENTORS: ERIC LARSON, SENIOR RESEARCH ENGINEER, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT; TUBAGUS ARYANDI GUNAWAN, POSTDOCTORAL RESEARCH ASSOCIATE, ANDLINGER CENTER FOR ENERGY AND THE ENVIRONMENT

Oceans and the Environment

2:30 PM – 4:15 PM

MODERATOR: BESS WARD, WILLIAM J. SINCLAIR PROFESSOR OF GEOSCIENCES AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE

The δ88Sr Composition of Marine Carbonates

KIRILL SIRIK '27, OPERATIONS RESEARCH AND FINANCIAL ENGINEERING

MENTORS: JOHN HIGGINS, PROFESSOR OF GEOSCIENCES; MATTHEW NADEAU, PH.D. CANDIDATE, GEOSCIENCES

Molecular Biology and Chemistry of the Nitrogen Cycle

SASHA MYKHANTOS '27, MOLECULAR BIOLOGY

MENTORS: BESS WARD, WILLIAM J. SINCLAIR PROFESSOR OF GEOSCIENCES AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; SAMANTHA FORTIN, POSTDOCTORAL RESEARCH ASSOCIATE, GEOSCIENCES; AMAL JAYAKUMAR, SENIOR PROFESSIONAL SPECIALIST, GEOSCIENCES

Nitrogen Cycling in the Ocean

CELIA MURPHY-BRAUNSTEIN '25, GEOSCIENCES

MENTORS: BESS WARD, WILLIAM J. SINCLAIR PROFESSOR OF GEOSCIENCES AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; SAMANTHA FORTIN, POSTDOCTORAL RESEARCH ASSOCIATE, GEOSCIENCES; JENNA LEE, PH.D. CANDIDATE, GEOSCIENCES; WEIYI TANG, POSTDOCTORAL RESEARCH ASSOCIATE, GEOSCIENCES

Nitrate Concentrations in the Southern Pacific Ocean

MARLAN ZHA '27, CHEMISTRY

MENTORS: BESS WARD, WILLIAM J. SINCLAIR PROFESSOR OF GEOSCIENCES AND THE HIGH MEADOWS ENVIRONMENTAL INSTITUTE; SAMANTHA FORTIN, POSTDOCTORAL RESEARCH ASSOCIATE, GEOSCIENCES; AMAL JAYAKUMAR, SENIOR PROFESSIONAL SPECIALIST, GEOSCIENCES; WEIYI TANG, POSTDOCTORAL RESEARCH ASSOCIATE, GEOSCIENCES

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